APPENDIX A
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1. A method of detecting a low power condition in a satellite navigation system, comprising:

receiving at least one global positioning satellite radio signal;

determining a signal-to-noise ratio of the satellite radio signal;

calculating from the signal-to-noise ratio a low-power condition error contribution; and

calculating a total error based at least in part on the low-power condition error contribution.

2. The method of claim 1, wherein determining the signal-to-noise ratio includes:

measuring a wide band power of the satellite radio signal over a first time period;

measuring a narrow band power of the satellite radio signal over a second time period;

calculating an estimated signal-to-noise ratio based on the narrow band power and the wide band power.

3. The method of claim 2, wherein measuring a wide band power includes averaging the wide band power over the first time period to obtain a value P_w , and wherein measuring a narrow band power includes averaging the narrow band power over the second time period to obtain a value P_n.

4. The method of claim 3, wherein the first time period has a length T, the second time period has a length that is M times as long as T, and the signal-to-noise ratio S/No is calculated according to the following equation.

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$$S/No = 10 \log_{10} [\frac{1}{T} \frac{P_n - P_w}{MP_w - P_n}]$$

5. The method of claim 2, wherein calculating an estimated signal-to-noise ratio includes calculating a lower confidence limit.

6. The method of claim 5, wherein determining a signal-to-noise ratio comprises determining a lower confidence limit of the signal-to-noise ratio.

7. The method of claim 6, wherein determining a lower confidence limit includes calculating an estimated signal-to-noise ratio and subtracting a confidence offset from the estimated signal-to-noise ratio.

8. The method of claim 7, wherein the confidence offset dS/No_low is determined by the following equation:

$$P_{lim} = \int_{-dS/No\_low}^{\infty} pdf(x)\, dx.$$

10. The method of claim 1, further comprising determining whether the total error exceeds an alert limit, and issuing an alert if the error exceeds the alert limit.

11. A method of detecting a low power condition in a local area augmentation system, comprising:

receiving a global positioning satellite radio signal;

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determining a navigational measurement based at least in part on the received radio signal;

determining a signal-to-noise ratio of the received radio signal; [[and]]

determining an error in the navigational measurement based at least in part on the signal-to-noise ratio; and

determining whether the error exceeds an alert limit, and issuing an alert if the error exceeds the alert limit.

12. The method of claim 11, wherein determining the signal-to-noise ratio includes:

measuring a wide band power of the satellite radio signal over a first time period;

measuring a narrow band power of the satellite radio signal over a second time period;

determining a signal-to-noise ratio based on the narrow band power and the wide band power.

13. The method of claim 12, wherein measuring a wide band power includes averaging the wide band power over the first time period to obtain the value P_w, and wherein measuring a narrow band power includes averaging the narrow band power over the second time period to obtain the value P_n.

14. The method of claim 13, wherein the first time period has a length T, the second time period has a length that is M times as long as T, and the signal-to-noise ratio S/No is calculated according to the following equation.

$$S/No = 10 \log_{10} [\frac{1}{T} \frac{P_n - P_w}{MP_w - P_n}]$$

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15. The method of claim 11, wherein determining a signal-to-noise ratio includes calculating a lower confidence limit.

16. The method of claim 15, wherein determining a signal-to-noise ratio comprises determining a lower confidence limit of the signal-to-noise ratio.

17. The method of claim 16, wherein determining a lower confidence limit includes calculating an estimated signal-to-noise ratio and subtracting a confidence offset from the estimated signal-to-noise ratio.

18. The method of claim 17, wherein the confidence offset dS/No_low is determined by the following equation:

$$P_{lim} = \int_{-dS/No\_low}^{\infty} pdf(x)\, dx.$$

20. In a local area augmentation system, a system for detecting a low-power condition comprising:

a wide band power estimator operative to measure an average wide band power;

a narrow band power estimator operative to measure an average narrow band power;

a signal-to-noise ratio module operative to calculate a signal-to-noise ratio from the estimated wide band power and the estimated narrow band power; and

a low-power error module operative to calculate, from the signal-to-noise ratio, an error contribution attributable to a low-power condition.

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21. The system of claim 20, wherein:

the signal-to-noise ratio module further comprises confidence limit logic operative to determine a lower confidence limit; and

wherein the signal-to-noise ratio calculated by the signal-to-noise ratio logic is the lower confidence limit.

22. The system of claim 21, further comprising:

a total error module operative to calculate a total error based at least in part on the low-power condition error contribution; and

alert logic operative to determine whether the total error exceeds an alert limit and to issue an alert if the error exceeds the alert limit.

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